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A New Species of *Amygdalus* (Rosaceae) from Iran

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ABSTRACT. *Amygdalus ghahremanii* Maroofi, Attar & Vafadar, a new shrubby species of the genus *Amygdalus* L. (Rosaceae) from Iran, is described and illustrated. This new species was collected from Kurdistan Province in western Iran. The closest relative to *A. ghahremanii* is *A. korshinskyi* (Hand.-Mazz.) Bornm., which also occurs as a more or less widespread species in western and northwestern Iran and is a sympatric relative. Morphological differences between *A. ghahremanii* and *A. korshinskyi* are found in the indumentum of young branches and petioles, length of pedicels, length of hypanthia, sepals and styles, as well as in the internal indumentum of the basal portion of the hypanthium and in the shape of drupes and stones.

Key words: *Amygdalus*, Iran, IUCN Red List, Kurdistan, Rosaceae.

The family Rosaceae with 29 genera and 243 species (Ghahreman & Attar, 1999) is one of the most significant and taxonomically problematic plant families in Iran, with 58 taxa considered to be endemic. Among these, *Amygdalus* L., a genus of deciduous trees and shrubs, has particular status because Iran appears to be the principal center for its species diversity. Approximately 40 to 45 species comprise the genus, which is distributed mainly in the Irano-Turanian region in southwestern and middle Asia as well as in the Mediterranean region. A few species are known to occur in eastern Asia (China and Mongolia) as well as into southeastern Europe (Browicz & Zohary, 1996). *Amygdalus* species are adapted to semi-arid environments, steppes, mountainous areas, and rocky or gravelly slopes. According to Flora Iranica (Browicz, 1969), *Amygdalus* is represented by 15 species and two hybrids in Iran. Based on the Flora of Iran (in Persian), within the Rosaceae (Khatamsaz, 1993) *Amygdalus* has 21 species and six hybrids. Species of *Amygdalus* are found in neighboring countries, especially in Turkey, Russia, central Asia, and the Middle East (Shishkin & Yuzepchuk, 1941; Browicz, 1972; Zohary, 1972). In this paper, *A. ghahremanii* Maroofi, Attar & Vafadar, a new shrubby species, is described and is assigned within *Amygdalus* subg. *Amygdalus* sect. *Amygdalus*.

Amygdalus ghahremanii Maroofi, Attar & Vafadar, sp. nov. TYPE: Iran. Kurdistan: ca. 34 km from Saqqez to Baneh, beginning of rd. of Nakarouz Mtn., 1500 m, 8 May 2007, *H. Maroofi*, *F. Attar & M. Vafadar 37325* (holotype, TUH). Figure 1.

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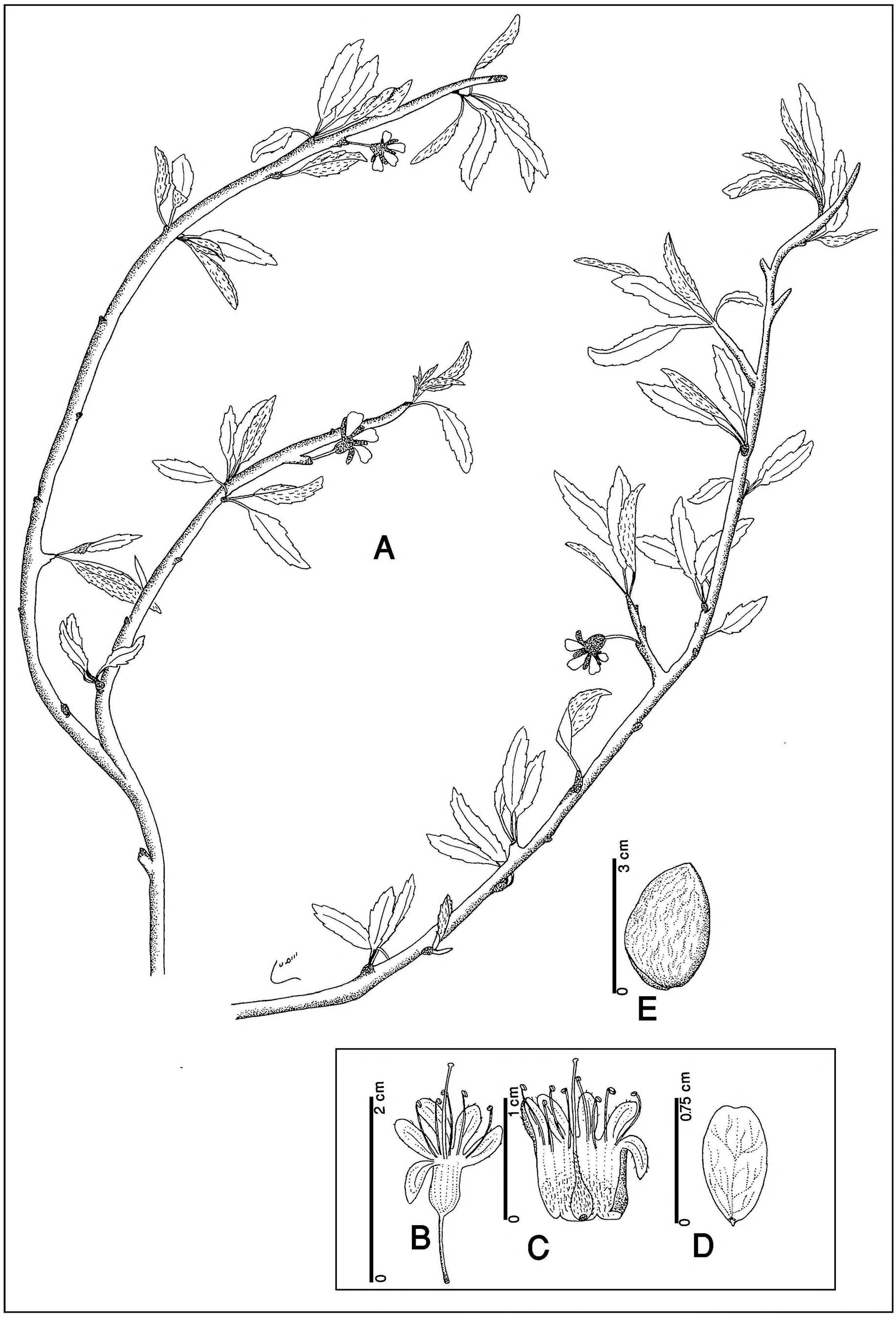

Figure 1. *Amygdalus ghahremanii* Maroofi, Attar & Vafadar. —A. Fertile habit. —B. Intact flower with external view of hypanthium. —C. Flower, with the hypanthium dissected to reveal the biseriate stamens and gynoecium. —D. Petal. —E. Drupe. A–E drawn from the holotype *H. Maroofi, F. Attar & M. Vafadar 37325* (TUH).

Haec species *Amygdalo korshinskyi* (Hand.-Mazz.) Bornm. afffinis, sed ab eo ramulis junioribus pubescentibus (nec glabris), petiolis usque ad 12 (nec 10) mm longis pubescentibus; pedicellis usque ad 10 (nec 3) mm longis, sepalis 7–8 (nec ca. 4) mm longis, hypanthio ca. 7 (nec 5) mm longo ad basem villoso, sepalorum cum hypanthio proportione ca. 1.07:1 (nec ca. 0.8:1), stylo usque ad 12 (nec 8) mm longo atque drupis ovoideis 33–35 × 22–23 (nec ca. 30 × 24) mm differt.

Table 1. Morphological differences between *Amygdalus korshinskyi* (Hand.-Mazz.) Bornm. and *A. ghahremanii* Maroofi, Attar & Vafadar.

	A. ghahremanii	*A. korshinskyi*
Young branch indumentum	pubescent	glabrous
Leaf length (mm)	30–45	25–40
Leaf width (mm)	8–13	10–15
Petiole length (mm)	10–12	8–10
Petiole indumentum	pubescent	glabrous
Pedicel length (mm)	9–10	to 3
Hypanthium length (mm)	7	5
Sepal color	red-brown	red-pink
Sepal length (mm)	7–8	4
Sepal length:hypanthium length ratio	1.07:1	0.8:1
Hypanthium internal indumentum	yellowish villous at base	yellowish orange pubescent throughout
Style length (mm)	11–12	8
Drupe shape	ovoid, compressed apically	broadly ovoid to elliptic, not compressed
Drupe length (mm)	33–35	to 30
Endocarp or stone shape	ovoid	indistinctly keeled

Shrubs, 4.5+ m tall, with strict to erect branches unarmed, with numerous brachyblasts; annual shoots brown, older shoots dark gray to brown; young branches pubescent, then glabrate. Leaves alternate or fasciculate, stipulate, with the blades adaxially glabrous, abaxially pubescent, narrowly ovate to narrowly elliptic, 30–45 × 8–13 mm, acute, marginally dentate-crenate to dentate-serrate, the teeth terminated with 1 dark brown gland, broadly cuneate at base; petioles 10–12 mm, pubescent. Flowers solitary on axillary branchlets; outer bracts 1.5 mm, triangular-cordate, acuminate, glabrous, dark brown, persistent, inner bracts 7 mm, oblong to obovate, acuminate, pubescent externally, lighter pale brown, brown at apex; pedicels 9–10 mm. Flower with the hypanthium red-brown, glabrous, campanulate, 7 mm, villous internally with yellowish indumentum at base; sepals 5, imbricate, oblong, lightly pubescent, red-brown, 7–8 mm, sepal length: hypanthium length ratio 1.07:1; corolla 32–34 mm diam., petals bright pink, oblong to obovate, 15–16 mm, emarginate at apex, with a brief claw; stamens 24 to 27, inserted and biseriate, filaments 4.5–7.5 mm, pink; ovary with the style 11–12 mm, pubescent in lower portion. Fruit a drupe, ovoid, velutinous pubescent, acute, 33–35 × 22–23 mm, compressed apically; stone or endocarp surface light brown, ovoid, foveolate with some small grooves only near the base and with 1 lateral groove, truncate or broadly cuneate at base, compressed.

Distribution. *Amygdalus ghahremanii* is collected from rocky areas at the beginning of the road to Nakarouz Mountain, which is located in Baneh in Kurdistan Province, Iran. This province represents the principal center of species diversification for *Amygdalus* in Iran.

IUCN Red List category. *Amygdalus ghahremanii* was collected from a small population consisting of ca. 20 shrubby individuals at the type location. Because the species has been collected from only one location and there have been no other collections since, *A. ghahremanii* is classified as Data Deficient (DD), according to the IUCN Red List criteria (2001).

Etymology. The epithet was chosen in honor of the late professor Ahmad Ghahreman (1938–2008). He is the founder of the TUH Herbarium, the author of the 26-volume illustrated Flora of Iran, and is considered the father of botany in Iran.

Discussion. *Amygdalus ghahremanii* has one unique feature among the 23 species of *Amygdalus* recognized in Iran (Khatamsaz, 1992; Attar et al., 2009). The new species possesses the longest pedicels (9–10 mm) for species of *Amygdalus* in Iran. It is notable that flowers of *Amygdalus* species are either sessile to subsessile or pedicel length may range from 3 to 7 mm. Based on characters including the vegetative form and shrub height, leaf shape, hypanthial shape, and endocarp or stone indumentum, *A. ghahremanii* is related to *A. korshinskyi* (Hand.-Mazz.) Bornm., and the new species should be placed in *Amygdalus* subg. *Amygdalus* sect. *Amygdalus*. However, other morphological characters, especially the pubescent young branches and petioles, the uniquely long pedicels, the longer hypanthia, sepals, and styles, the villous indumentum of the basal hypanthium, as well as the ovoid shape of drupes and stones, indicate considerable differences between these two related species (Table 1).

Paratypes. IRAN. **Kurdistan:** ca. 34 km from Saqqez to Baneh, beginning of rd. of Nakarouz Mtn., 1500 m, 10 May 2007, *H. Maroofi, F. Attar & M. Vafadar 37245* (TUH), 10 Aug. 2006, *F. Attar, H. Maroofi & A. Zamani 36356, 36359, 36360, 36362* (TUH).

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